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OIPE

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/596,746

DATE: 06/30/2000
TIME: 14:16:24

Input Set : A:\26311002001.txt
Output Set: N:\CRF3\06302000\I596746.raw

ENTERED

```

4 <110> APPLICANT: Dattwyler, Raymond J.
5   Seinost, Gerald
6   Dykhuizen, Danial
7   Luft, Benjamin J.
8   Maria J.C. Gomes-Solecki
10 <120> TITLE OF INVENTION: Groups of Borrelia burgdorferi and
11   Borrelia afzelii That Cause Lyme Disease in Humans
14 <130> FILE REFERENCE: 2631.1002-001
C--> 16 <140> CURRENT APPLICATION NUMBER: US/09/596,746
C--> 16 <141> CURRENT FILING DATE: 2000-06-16
16 <150> PRIOR APPLICATION NUMBER: US 60/140,042
17 <151> PRIOR FILING DATE: 1999-06-18
19 <160> NUMBER OF SEQ ID NOS: 84
21 <170> SOFTWARE: FastSEQ for Windows Version 4.0
23 <210> SEQ ID NO: 1
24 <211> LENGTH: 24
25 <212> TYPE: DNA
26 <213> ORGANISM: Artificial Sequence
28 <220> FEATURE:
29 <223> OTHER INFORMATION: Primer
31 <400> SEQUENCE: 1
32 aaagaataca ttaagtgcga tatt                24
34 <210> SEQ ID NO: 2
35 <211> LENGTH: 27
36 <212> TYPE: DNA
37 <213> ORGANISM: Artificial Sequence
39 <220> FEATURE:
40 <223> OTHER INFORMATION: Primer
42 <400> SEQUENCE: 2
43 caatccactt aatttttgtg ttattag            27
45 <210> SEQ ID NO: 3
46 <211> LENGTH: 26
47 <212> TYPE: DNA
48 <213> ORGANISM: Artificial Sequence
50 <220> FEATURE:
51 <223> OTHER INFORMATION: Primer
53 <400> SEQUENCE: 3
54 ttgttagcag gagcttatgc aatatac            26
56 <210> SEQ ID NO: 4
57 <211> LENGTH: 22
58 <212> TYPE: DNA
59 <213> ORGANISM: Artificial Sequence
61 <220> FEATURE:
62 <223> OTHER INFORMATION: Primer
64 <400> SEQUENCE: 4
65 gggcttgtaa gctctttaac tg                22
67 <210> SEQ ID NO: 5

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68 <211> LENGTH: 573
69 <212> TYPE: DNA
70 <213> ORGANISM: borrelia burgdorferi
72 <220> FEATURE:
73 <221> NAME/KEY: CDS
74 <222> LOCATION: (1)...(573)
76 <400> SEQUENCE: 5
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78 Met Ala Cys Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser Ala Asn Ser
79 1 5 10 15
81 gct gat gag tct gtt aaa ggg cct aat ctt aca gaa ata agt aaa aaa 96
82 Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys
83 20 25 30
85 att acg gat tct aat gcg gtt tta ctt gct gtg aaa gag gtt gaa gcg 144
86 Ile Thr Asp Ser Asn Ala Val Leu Leu Ala Val Lys Glu Val Glu Ala
87 35 40 45
89 ttg ctg tca tct ata gat gag ctt gct aaa gct att ggt aaa aaa ata 192
90 Leu Leu Ser Ser Ile Asp Glu Leu Ala Lys Ala Ile Gly Lys Lys Ile
91 50 55 60
93 aaa aac gat ggt agt tta gat aat gaa gca aat cgc aac gag tca ttg 240
94 Lys Asn Asp Gly Ser Leu Asp Asn Glu Ala Asn Arg Asn Glu Ser Leu
95 65 70 75 80
97 tta gca gga gct tat aca ata tca acc tta ata aca caa aaa tta agt 288
98 Leu Ala Gly Ala Tyr Thr Ile Ser Thr Leu Ile Thr Gln Lys Leu Ser
99 85 90 95
101 aaa tta aac gga tca gaa ggt tta aag gaa aag att gcc gca gct aag 336
102 Lys Leu Asn Gly Ser Glu Gly Leu Lys Glu Lys Ile Ala Ala Lys
103 100 105 110
105 aaa tgc tct gaa gag ttt agt act aaa cta aaa gat aat cat gca cag 384
106 Lys Cys Ser Glu Glu Phe Ser Thr Lys Leu Lys Asp Asn His Ala Gln
107 115 120 125
109 ctt ggt ata cag ggc gtt act gat gaa aat gca aaa aaa gct att tta 432
110 Leu Gly Ile Gln Gly Val Thr Asp Glu Asn Ala Lys Lys Ala Ile Leu
111 130 135 140
113 aaa gca aat gca gcg ggt aaa gat aag ggc gtt gaa gaa ctt gaa aag 480
114 Lys Ala Asn Ala Ala Gly Lys Asp Lys Gly Val Glu Glu Leu Glu Lys
115 145 150 155 160
117 ttg tcc gga tca tta gaa agc tta tca aaa gca gct aaa gag atg ctt 528
118 Leu Ser Gly Ser Leu Glu Ser Leu Ser Lys Ala Ala Lys Glu Met Leu
119 165 170 175
121 gct aat tca gtt aaa gag ctt aca agc cct gtt gtc cat gga tcc 573
122 Ala Asn Ser Val Lys Glu Leu Thr Ser Pro Val Val His Gly Ser
123 180 185 190
127 <210> SEQ ID NO: 6
128 <211> LENGTH: 190
129 <212> TYPE: PRT
130 <213> ORGANISM: borrelia burgdorferi
132 <400> SEQUENCE: 6
133 Ala Cys Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser Ala Asn Ser Ala

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134 1          5          10          15
135 Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile
136          20          25          30
137 Thr Asp Ser Asn Ala Val Leu Leu Ala Val Lys Glu Val Glu Ala Leu
138          35          40          45
139 Leu Ser Ser Ile Asp Glu Leu Ala Lys Ala Ile Gly Lys Lys Ile Lys
140          50          55          60
141 Asn Asp Gly Ser Leu Asp Asn Glu Ala Asn Arg Asn Glu Ser Leu Leu
142 65          70          75          80
143 Ala Gly Ala Tyr Thr Ile Ser Thr Leu Ile Thr Gln Lys Leu Ser Lys
144          85          90          95
145 Leu Asn Gly Ser Glu Gly Leu Lys Glu Lys Ile Ala Ala Lys Lys
146          100          105          110
147 Cys Ser Glu Glu Phe Ser Thr Lys Leu Lys Asp Asn His Ala Gln Leu
148          115          120          125
149 Gly Ile Gln Gly Val Thr Asp Glu Asn Ala Lys Lys Ala Ile Leu Lys
150          130          135          140
151 Ala Asn Ala Ala Gly Lys Asp Lys Gly Val Glu Glu Leu Glu Lys Leu
152 145          150          155          160
153 Ser Gly Ser Leu Glu Ser Leu Ser Lys Ala Ala Lys Glu Met Leu Ala
154          165          170          175
155 Asn Ser Val Lys Glu Leu Thr Ser Pro Val Val His Gly Ser
156          180          185          190
159 <210> SEQ ID NO: 7
160 <211> LENGTH: 557
161 <212> TYPE: DNA
162 <213> ORGANISM: Borrelia burgdorferi
164 <220> FEATURE:
165 <221> NAME/KEY: CDS
166 <222> LOCATION: (1)...(557)
168 <400> SEQUENCE: 7
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170 Met Ala Cys Asn Asn Ser Gly Lys Asp Gly Asn Ala Ser Ala Asn Ser
171 1          5          10          15
173 gct gat gag tct gtt aaa ggg cct aat ctt aca gaa ata agt aaa aaa 96
174 Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys
175          20          25          30
177 att aca gaa tct aac gca gtt gtt ctg gcc gtg aaa gaa gtt gag acc 144
178 Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu Val Glu Thr
179          35          40          45
181 tta ctt gca tct ata gat gaa ctt gct acc aaa gct att ggt aaa aaa 192
182 Leu Leu Ala Ser Ile Asp Glu Leu Ala Thr Lys Ala Ile Gly Lys Lys
183          50          55          60
185 ata ggc aat aat ggt tta gag gcc aat cag agt aaa aac aca tca ttg 240
186 Ile Gly Asn Asn Gly Leu Glu Ala Asn Gln Ser Lys Asn Thr Ser Leu
187 65          70          75          80
189 tta tca gga gct tat gca ata tct gac cta ata gca gaa aaa tta aat 288
190 Leu Ser Gly Ala Tyr Ala Ile Ser Asp Leu Ile Ala Glu Lys Leu Asn
191          85          90          95

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193 gta ttg aaa aat gaa gaa tta aag gaa aag att gat aca gct aag caa 336
194 Val Leu Lys Asn Glu Glu Leu Lys Glu Lys Ile Asp Thr Ala Lys Gln
195 100 105 110
197 tgt tct aca gaa ttt act aat aaa cta aaa agt gaa cat gca gtg ctt 384
198 Cys Ser Thr Glu Phe Thr Asn Lys Leu Lys Ser Glu His Ala Val Leu
199 115 120 125
201 ggt ctg gac aat ctt act gat gat aat gca caa aga gct att tta aaa 432
202 Gly Leu Asp Asn Leu Thr Asp Asp Asn Ala Gln Arg Ala Ile Leu Lys
203 130 135 140
205 aaa cat gca aat aaa gat aag ggt gct gca gaa ctt gaa aag tta ttt 480
206 Lys His Ala Asn Lys Asp Lys Gly Ala Ala Glu Leu Glu Lys Leu Phe
207 145 150 155 160
209 aaa gcg gta gaa aac tta tca aaa gca gct caa gac aca tta aaa aat 528
210 Lys Ala Val Glu Asn Leu Ser Lys Ala Ala Gln Asp Thr Leu Lys Asn
211 165 170 175
213 gct gtt aaa gag ctt aca agt cct att gt 557
W--> 214 Ala Val Lys Glu Leu Thr Ser Pro Ile
215 180 185
218 <210> SEQ ID NO: 8
219 <211> LENGTH: 184
220 <212> TYPE: PRT
221 <213> ORGANISM: Borrelia burgdorferi
223 <400> SEQUENCE: 8
224 Ala Cys Asn Asn Ser Gly Lys Asp Gly Asn Ala Ser Ala Asn Ser Ala
225 1 5 10 15
226 Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile
227 20 25 30
228 Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu Val Glu Thr Leu
229 35 40 45
230 Leu Ala Ser Ile Asp Glu Leu Ala Thr Lys Ala Ile Gly Lys Lys Ile
231 50 55 60
232 Gly Asn Asn Gly Leu Glu Ala Asn Gln Ser Lys Asn Thr Ser Leu Leu
233 65 70 75 80
234 Ser Gly Ala Tyr Ala Ile Ser Asp Leu Ile Ala Glu Lys Leu Asn Val
235 85 90 95
236 Leu Lys Asn Glu Glu Leu Lys Glu Lys Ile Asp Thr Ala Lys Gln Cys
237 100 105 110
238 Ser Thr Glu Phe Thr Asn Lys Leu Lys Ser Glu His Ala Val Leu Gly
239 115 120 125
240 Leu Asp Asn Leu Thr Asp Asp Asn Ala Gln Arg Ala Ile Leu Lys Lys
241 130 135 140
242 His Ala Asn Lys Asp Lys Gly Ala Ala Glu Leu Glu Lys Leu Phe Lys
243 145 150 155 160
244 Ala Val Glu Asn Leu Ser Lys Ala Ala Gln Asp Thr Leu Lys Asn Ala
245 165 170 175
246 Val Lys Glu Leu Thr Ser Pro Ile
247 180
250 <210> SEQ ID NO: 9
251 <211> LENGTH: 579

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252 <212> TYPE: DNA
253 <213> ORGANISM: Borrelia burgdorferi
255 <220> FEATURE:
256 <221> NAME/KEY: CDS
257 <222> LOCATION: (1)...(579)
259 <400> SEQUENCE: 9
260 atg act tta ttt tta ttt ata tct tgt aat aat tca ggg aaa gat ggg 48
261 Met Thr Leu Phe Leu Phe Ile Ser Cys Asn Asn Ser Gly Lys Asp Gly
262 1 5 10 15
264 aat aca tct gca aat tct gct gat gag tct gtt aaa ggg cct aat ctt 96
265 Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu
266 20 25 30
268 aca gaa ata agt aaa aaa att acg gat tct aat gcg gtt tta ctt gct 144
269 Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu Leu Ala
270 35 40 45
272 gtg aaa gag gtt gaa gcg ttg ctg tca tct ata gat gaa att gct gct 192
273 Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Ile Ala Ala
274 50 55 60
276 aaa gct att ggt aaa aaa ata cac caa aat aat ggt ttg gat acc gaa 240
277 Lys Ala Ile Gly Lys Lys Ile His Gln Asn Asn Gly Leu Asp Thr Glu
278 65 70 75 80
280 aat aat cac aat gga tca ttg tta gcg gga gct tat gca ata tca acc 288
281 Asn Asn His Asn Gly Ser Leu Leu Ala Gly Ala Tyr Ala Ile Ser Thr
282 85 90 95
284 cta ata aaa caa aaa tta gat gga ttg aaa aat gaa gga tta aag gaa 336
285 Leu Ile Lys Gln Lys Leu Asp Gly Leu Lys Asn Glu Gly Leu Lys Glu
286 100 105 110
288 aaa att gat gcg gct aag aaa tgt tct gaa aca ttt act aat aaa tta 384
289 Lys Ile Asp Ala Ala Lys Lys Cys Ser Glu Thr Phe Thr Asn Lys Leu
290 115 120 125
292 aaa gaa aaa cac aca gat ctt ggt aaa gaa ggt gtt act gat gct gat 432
293 Lys Glu Lys His Thr Asp Leu Gly Lys Glu Gly Val Thr Asp Ala Asp
294 130 135 140
296 gca aaa gaa gcc att tta aaa aca aat ggt act aaa act aaa ggt gct 480
297 Ala Lys Glu Ala Ile Leu Lys Thr Asn Gly Thr Lys Thr Lys Gly Ala
298 145 150 155 160
300 gaa gaa ctt gga aaa tta ttt gaa tca gta gag gtc ttg tca aaa gca 528
301 Glu Glu Leu Gly Lys Leu Phe Glu Ser Val Glu Val Leu Ser Lys Ala
302 165 170 175
304 gct aaa gag atg ctt gct aat tca gtt aaa gag ctt aca agc cct gtt 576
305 Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr Ser Pro Val
306 180 185 190
308 gtg 579
309 Val
313 <210> SEQ ID NO: 10
314 <211> LENGTH: 192
315 <212> TYPE: PRT
316 <213> ORGANISM: Borrelia burgdorferi
318 <400> SEQUENCE: 10

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VERIFICATION SUMMARY
PATENT APPLICATION: US/09/596,746

DATE: 06/30/2000
TIME: 14:16:25

Input Set : A:\26311002001.txt
Output Set: N:\CRF3\06302000\I596746.raw

L:16 M:270 C: Current Application Number differs, Replaced Current Application No
L:16 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:214 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 7
L:773 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 19
L:1181 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 25
L:1519 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 29
L:1688 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 31
L:2026 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 35
L:2746 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 45
L:3989 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 61
L:4328 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 65
L:4497 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 67
L:5010 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 73
L:5179 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 75
L:5702 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 81